

Remarks

Claims 1 – 7 and 15 –19 have been rejected under 35 U.S.C. 102(b) as being anticipated by Dudek (U.S. Patent 3,869,113). Dudek discloses a bushing with an inner rigid member and an outer rigid member between which is positioned an elastomeric-fabric composite convolution. The elastomeric-fabric composite convolution of Dudek is a plurality of overlapping turns of a laminate having an array of flexible fiber cords disposed between layers of elastomer with the flexible fiber cords and elastomer bonded together. Dudek does not disclose a laminated bearing composite shim that is non-extensible, in that the elastomeric fabric composite convolution is extensible and formed from flexible fiber cords and flexible elastomer. Dudek does not disclose a non-extensible shim between its inner and outer rigid members. The claims have been amended to clearly define and claim that the laminated bearing composite shim of the invention is non-extensible and has a non-extensible composite layer with a circumferential fiber in a non-extensible matrix material. In that the elastomeric-fabric composite convolution of Dudek is not non-extensible, Dudek does not anticipate the rejected claims, and actually teaches away from the claims in that Dudek teaches an extensible composite convolution of flexible fiber cords bonded to flexible elastomeric layers.

Claims 30 – 32 have been rejected under 35 U.S.C. 102(b) as being anticipated by Dudek (U.S. Patent 3,869,113). As discussed above, Dudek discloses an extensible elastomeric-fabric composite convolution of flexible fiber cords bonded to flexible elastomeric layers. Dudek does not disclose or suggest a non-extensible composite shim. Dudek actually teaches away from claims 30 – 32 in that Dudek teaches an extensible elastomeric-fabric composite convolution. Amended claims 30 –32 are not anticipated by Dudek.

Claims 1 – 2, 4 – 8, and 11 – 13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Dudek (U.S. Patent 3,869,113) in view of Williams et al (U.S. Patent 5,363,929). As discussed above, Dudek discloses a bushing with an inner rigid

member and an outer rigid member with an extensible flexible elastomeric-fabric composite convolution there between. Williams has been previously combined with Dudek to provide a bushing of Dudek with alternating orientation angles of the layers of the fibers, reinforcing fibers of carbon, glass and aramid; a laminate with thermoset epoxy resin. The composite convolution of Dudek's bushing is extensible and flexible. Dudek does not disclose the use of non-extensible composite layers, and actually teaches away from such in that the composite of Dudek is an elastomeric-fabric composite convolution, with the only rigid non-extensible parts of the bushing being the inner and outer rigid members. Williams discloses a downhole fluid motor composite torque shaft which is not related to bushings or laminated bearing shims. Applicants contend that such a proposed combination Dudek and Williams render the presently amended claims obvious is improper in that Dudek only teaches the use of flexible extensible elastomeric-fabric composite convolutions and the use of a non-elastomer resin. The invention of Dudek is based on its insert unit being a composite of a convolution of overlapping turns of a laminate of flexible fiber cords between layers of elastomer with the cords and elastomer being bonded together, and the combination of Williams's rigid, non-elastomer resin in place of Dudek's elastomer would defeat this. Further such a combination of Dudek with Williams to obviate the present claims to laminated bearing non-extensible composite shims is improper in that Dudek distinguishes itself from "the use of multi-inserts" "to achieve high load bearing capabilities" because such multiple inserts "greatly limits the number of design parameters available as well as creates production problems." (Dudek column 1, lines 37 – 43). Claims 1 – 2, 4 – 8, and 11 – 13 claim a non-extensible, laminated bearing composite shim which is not rendered obvious by the combination of Dudek and Williams.

Claims 21 – 25 have been rejected under 37 U.S. C. 103(a) as being obviated by Clinard (U.S. Patent 4,108,508) in view of Dudek (U.S. 3,869,113). Clinard discloses a laminated bearing with alternating and bonded together layers of elastomeric material and substantially non-extensible material. Clinard teaches that the nonextensible material layers are steel and the alternative non-extensible materials may include other metals, fiberglass, reinforced plastic, and similar composite materials reinforced with high strength fibers. Clinard does not disclose if there is any orientation, geometry, or location of such high strength fibers. Dudek is combined with Clinard, with Dudek showing that its flexible fiber

cords can be arranged in axial and uniaxial manners. Applicants contend that such a combination of Clinard with Dudek is improper and does not render the presently pending claims obvious in that the cited reference in Clinard to composite materials reinforced with high strength fibers is for the non-extensible material of Clinard's laminated bearing in contrast to Dudek's flexible fiber cords being in an elastomeric-fabric composite convolution. In that Clinard clearly distinguishes between its non-extensible material layers and its elastomeric material layers and that such are opposites (non-extensible versus elastomeric) it is improper to combine the flexible fiber cord orientations of Dudek (where they are in extensible elastomer material) into the nonelastomer non-extensible layers of Clinard. Applicants further contend that the combination of Clinard with Dudek does not suggest or render obvious the present claims to a laminated bearing with a non-extensible composite shim with a circumferential fiber proximate its outer circumference that encircles and surrounds a portion of a composite layer of the non-extensible shim. The circumferential fiber of the present claims is in the non-extensible composite shim, is proximate the outer circumference of the non-extensible shim, and surrounds a portion of a non-extensible first composite layer of the composite shim. Such an orientation and placement of a circumferential fiber in a composite non-extensible laminated bearing shim is not shown of suggested by the cited prior art.

Claims 21 – 28 have been rejected under 35 U.S.C. 103(a) as obvious over Clinard (U.S. Patent 4,108,508) in view of Dudek (U.S. Patent 3,869,113) in view of Williams (U.S. Patent 5,363,929). As discussed above, Clinard discloses a laminated bearing and mentions that the non-extensible material may be a composite material reinforced with high strength fibers. Clinard does not disclose the orientation or placement of such fibers in the non-extensible material. As discussed above, combining the fiber orientations of Dudek into Clinard is improper, since the oriented fibers of Dudek are part of an extensible composite of an elastomer. Also as discussed above the combination of the teaching of Dudek in view of Williams is improper in that Dudek's fibers are in an elastomeric composite and William teaches a rigid non-elastomer resin with fibers. Further the proposed combination of the three references Clinard, Dudek, and Williams does not result in a laminate bearing with a non-extensible shim that includes a composite layer with

a circumferential fiber proximate the composite shim outer circumference with the circumferential fiber surrounding an inner portion of the non-extensible composite layer.

Claims 30 – 36, 38 and 40 have been rejected under 35 U.S.C. 103(a) as being obvious over Dudek (U.S. Patent 3,869,113) in view of Williams (U.S. Patent 5,363,929). As discussed above, such a combination of Dudek in which the flexible fibers are part of an elastomeric composite free of rigid inserts with the rigid thermoset epoxy resin fiber laminate at Williams is improper in that it defeats the invention Dudek as disclosed. Further as discussed above, the proposed combination of Dudek and Williams does not suggest or disclose the present claims to a laminated bearing non-extensible composite shim with composite layer having a fiber that circumferentially surrounds the composite layer and is proximate the outer circumference of the composite shim.

Claims 30, 33, 37 and 39 have been rejected under 35 U.S.C. 103(a) as being obvious over Dudek (U.S. Patent 3,869,113) in view of Williams (U.S. Patent 5,363,929). As discussed above, the proposed combination of Dudek and Williams is improper in that Dudek requires an extensible flexible composite of fibers in an elastomer. Further as discussed above, a combination of these two references does not show a laminated bearing non-extensible composite shim with a non-extensible composite layer with a fiber that circumferentially surrounds the layer and is proximate the outer circumference of the composite shim.

Claims 30 and 41 – 44 have been rejected under 35 U.S.C. 103(a) as being obvious over Dudek (U.S. Patent 3,869,113) in view of Clinard (U.S. Patent 4,108,508). As discussed above, such a combination is not proper in that the fibers of Clinard are in its non-extensible layer and not in its elastomeric layer, and Dudek's fiber cords are in the elastomeric material. Further as discussed above, such a combination does not disclose or suggest a laminated bearing non-extensible composite shim with a composite layer having a fiber that circumferentially surrounds the composite layer and is proximate the composite shim outer circumference.

Claims 30 and 42 – 45 have been rejected under 35 U.S.C. 103(a) as obvious over Dudek (U.S. Patent 3,869,113) in view of Hatch (U.S. Patent 4,207,778). As discussed above, Dudek discloses a bushing with an elastomeric-fabric composite convolution between an inner and outer rigid member. As discussed above Dudek teaches away from multi-inserts and requires an elastomeric extensible composite convolution. The proposed combining of Hatch with Dudek is not proper in that composite flywheel of Hatch is rigid (with the Hatch fibers utilized for rigidity and stiffness) and such rigidly contained fibers is counter to Dudek's elastomer contained fibers. Additionally, the proposed combination does not render the present claims obvious in that the circumferential fibers of Hatch that are proximate the outer circumference are not part of the inner composite layer, but are part of a separate rim portion (130) with the rim portion (130) not part of the composite layers of central portion 20.

Claims 30, 42 - 44. and 46 have been rejected under 35 U.S.C. 103(a) as being obvious over Dudek (U.S. Patent 3,869,113) in view of Hatch (U.S. Patent 4,207,778). As discussed above such a combination is improper in that the invention of Dudek requires the fiber cords to be part of an elastomeric composite and the composite fibers of Hatch are part of a rigid non-elastomer flywheel. Further, the present claims are not disclosed or suggested by such a proposed combination in that the circumferential fibers of Hatch proximate its outer circumference are part of its outer rim portion (130) which is not part of the composite layers of central portion 20. The presently amended claims include a circumferential fiber that is part of a composite layer with the circumferential fiber surrounding the composite layer and positioned proximate the outer circumference of the composite shim.

Applicants believe that this is a full and complete response to the outstanding Office Action, and that the presently amended claims place the application in condition for allowance.

Applicants hereby authorize any fees needed in this application to be paid from Deposit Account Number 12-2143.

Enclosed is an Associate Power of Attorney.

A Two Month Extension of Time to respond to this Office Action and the associated Fee is also enclosed at this time.

Respectfully submitted,



Edward F. Murphy, III
Attorney for Applicant
Reg. No. 38,251
Lord Corporation
111 Lord Drive
Cary, North Carolina 27511

919-468-5979 ext. 6205 phone number
919-469-5226 facsimile number

CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed is being deposited on the date indicated below with the United States Postal Service in an envelope addressed to the Assistant Commissioner for Patents, Washington, DC 20231, with sufficient postage as first class mail (37 CFR 1.8(a)).


Signature of person mailing paper)

March 28, 2003
Date